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Hepatitis C Virus (HCV) Genotype and Subtype Transmission Have Distinct Patterns

By Brian Boyle, MD

Hepatitis C virus (HCV) infection is a worldwide problem that causes significant morbidity and mortality as a result of end stage liver disease and hepatocellular carcinoma. HCV is spread primarily through parenteral drug injection.

Following the political changes in Central in Eastern Europe in the 1980s, injection drug use and HCV infection increased significantly in this region. The pattern of the spread of HCV genotype and subtype in one of the countries in this region were examined in a recent report published in *Clinical Infectious Diseases*.

In order to evaluate the pattern of HCV genotype transmission and distribution in individuals newly-infected with HCV, from October, 1999 to January, 2000 investigators in the Czech Republic evaluated 101 HCV RNA positive patients in Prague, 59 of whom were intravenous drug use (IDU) and 42 of whom were not. HCV genotype was determined in 92 of the 101 patients. HCV genotypes 1, 2 and 3 were present in 95%, 1% and 3%, respectively, of the patients and 1% could not be typed. Of the genotype 1 patients, 24% were subtype 1a and 76% were subtype 1b.

The individuals infected with HCV 1a and 1b with an IDU risk factor were significantly younger than non-IDU individuals infected with those subtypes, and patients infected with subtype 1b were significantly older than those infected with 1a. Certain HCV risk factors including blood transfusion, surgery, hemodialysis, tattooing, and body piercing were not associated with a specific subtype. Among those genotype 1 patients with an IDU risk factor, the patients drug of choice was predictive of subtype infection: 58% who used heroin and 18% of those who used methamphetamine as their primary drug of choice were infected with HCV subtype 1a ($p=.025$).

The authors conclude, "These observations suggest a distinct pattern of HCV genotype and subtype transmission in Prague populations... These observations suggest that subtype 1b may have been present in Prague for a longer time than subtype 1a... The primary drug of

choice appears to determine HCV subtype infection among those who inject drugs in Prague, which suggest that distinct social networks may exist within this high-risk group."

While this small study is limited to patients in Prague, Czech Republic, it reflects a growing worldwide problem. Given the marked differences in disease progression rates and treatment success between the different HCV genotypes and subtypes, information gathered in studies such as this "may have relevance to other countries that are undergoing similar social changes that affect recent HCV hepatitis epidemiology."

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Reference

L Krekulova and others. Genotypic and Epidemiologic Characteristics of Hepatitis C Virus Infections among Recent Injection Drug User and Nonuser Populations. *Clinical Infectious Diseases*. 2001; 33:1435-38.

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